

# The Competitiveness of Clusters in Globalized Markets

Implications for Regional Development

Edited by  
Mario Davide Parrilli

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# The Competitiveness of Clusters in Globalized Markets

The debate on the competitiveness of local and regional clusters in the current globalized markets is a priority as globalization puts pressure on such production systems and forces them to find new ways of competition and sustainability. Many traditional clusters may be constrained by the growth of transnational value chains and production networks that benefit from cheap resources and workforce as well as softer regulations that may be exploited in other parts of the world. This situation is even more tangible with the internationalization of innovation networks that may replace the former relevant regional and national innovation systems. This volume discusses the features of successful clusters and the threats and opportunities they currently face in such globalized environment and offers some perspectives and solutions to sustain the resilience of local and regional production systems.

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*The Resilience of Clusters in the Context of Increasing Globalization: The Basque Wind Energy Value Chain*

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## Chapter 3

*Competitiveness and Technological Upgrading in Global Value Chains: Evidence from the Indonesian Electronics and Garment Sectors*

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## Chapter 4

*The Competitive Position of the Basque Aeroespacial Cluster in Global Value Chains: A Historical Analysis*

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# Local and Regional Development in Global Value Chains, Production Networks and Innovation Networks: A Comparative Review and the Challenges for Future Research

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**ABSTRACT** *Globalization as a process has developed exponentially over the past 20 years, generating multiple and opposite effects for local and regional development (LoRD). This has created both new opportunities as well as raising new threats for local actors, both public and private. This special issue sets out to consider the prospects for LoRD in this context. Our aim in the introductory article is to consider how globalization may bring about LoRD. We do this through a comparative review of three critical analytical frameworks that have been used in recent years to examine the changing dynamics of globalization and their consequences for local production systems, namely global value chains, global production networks and global innovation networks. We provide an overview of these distinct approaches, identifying their strengths and weaknesses. Our argument is not that any one of these approaches is necessarily “better” than the others, but rather that to formulate a more complete and dynamic territorial perspective on regional development in the context of globalization, there needs to be an attempt at (eclectically) integrating the elements of these three distinct frameworks. The article then goes on to show how individual contributions in this special issue push forward this agenda, drawing on these distinct analytical frameworks to consider the transformative prospects for LoRD.*



## Introduction

The globalization of markets has sharply increased over the past 20 years. This trend has multiple and opposite effects on the prospects for local and regional development (LoRD). It may create new economic opportunities (through, for example, productive investments, research and development (R&D) alliances, knowledge absorption, and the emergence of new consumers) and it may raise new threats (such as the relocation of production activities, firm closures, employment losses, brain drain, among others). In our view, the traditional perspective of regional economists offer rather circumscribed types of analysis on local production systems, small firm clusters and industrial districts. These are no longer sufficient to explain the features, limitations and potentials for the growth of local economies in an increasingly globalized era and need to be substantially revised. This is not a new criticism. Various approaches have emerged in recent years seeking to explore the emergent linkages between the local and global terrains. Our main aim in the introductory article to this special issue is to understand how globalization can bring about LoRD. We do this through a comparative review of three critical analytical frameworks that have been used in recent years to examine the changing dynamics of globalization and their consequences for local production systems, namely global value chains (GVCs), global production networks (GPNs) and global innovation networks (GINs). We provide an overview of these distinct approaches, identifying their strengths and weaknesses. Our argument is not that any one of these approaches is necessarily “better” than the others, but rather, that to formulate a more complete and dynamic territorial perspective on regional development in the context of globalization there needs to be an attempt at (eclectically) integrating the elements of these three distinct frameworks.

A number of sociologists and economists in development studies have sought to explain the nature of globalized linkages between firms and globally dispersed suppliers using the framework of GVCs (Humphrey & Schmitz, 2002; Gereffi *et al.*, 2005). On these bases, they have identified a typology of linkages between lead firms and suppliers in value chains that include hierarchical, captive, relational, modular and market governance patterns. These patterns in turn depend upon three main factors: supplier competences, knowledge codification and transaction complexity. Within this framework, some have argued that local development is linked to the nature of ties developed in GVCs (Humphrey & Schmitz, 2002).

Another group of scholars, from an economic geography perspective, have developed frameworks that help explain the global dynamics of firms and trans-national production systems and the articulation and disarticulation of production networks across different sub-national regions. They do so by taking into account more widely the institutional and cultural features and constraints of different territorial ensembles, as well as the explicit policy approach taken by states and institutions, which seek to develop their own competitive positions (Ernst & Kim, 2002; Yeung, 2007, 2009; Coe *et al.*, 2008).

The current global economic crisis adds complexity to this debate as these frameworks need to be both particularly flexible as well as continuously revised in order to capture the emergence of abrupt changes that modify current production, commercialization and innovation dynamics at the global scale. This editorial article will help the reader in two ways. First, this work (and the special issue as a whole) offers a comparative discussion of the theoretical and methodological instruments through which these key analytical frameworks (GVCs, GPNs and GINs) are adopted as a means to interpret the current dynamics

of globalization and its implications for LoRD. We attempt to compare them and, simultaneously, underline advantages and limitations of such theoretical and methodological approaches. Taken together, we hope to set out the analytical challenge that academics and policy experts face vis-à-vis the analysis of regional development processes and prospects. Second, this work seeks to visualize the core features of these three frameworks that are particularly relevant for analysing LoRD within the increasingly competitive international markets in which any firm and local production system can either integrate (e.g. representing new market opportunities) or exit (e.g. as a result of global competition).

In the next section, we briefly introduce the academic evolution of the three conceptual frameworks, and then open the context for a thorough discussion of their critical features. In section 3, we take into consideration a range of relevant criteria in which the three approaches differ, and discuss their strengths, weaknesses and limitations. In section 4, we specify the position of each of these frameworks in the analysis of LoRD in an era of globalization. Moreover, we formulate an integrative framework in order to sketch out the basic features for the analysis of the future prospects of LoRD. The concluding section presents the added value of this contribution and an overview of the articles included in this special issue.

### Historical Antecedents of Perspectives on Global Development Dynamics

A first step towards our theoretical synthesis requires a brief discussion of the historic process of internationalization of markets and the creation of frameworks that have set the scene for our current understanding of globalization (see also Hess & Yeung, 2006; Bair, 2009). For decades, many trade theorists, political economists and world-system experts have emphasized the importance of analysing the unequal industrial and market exchanges that led to the creation of core, semi-peripheries and peripheries (Prebisch, 1950; Singer, 1950; Hopkins & Wallerstein, 1977; Frank, 1978). These unequal relationships have either perpetuated themselves despite relevant changes in organizational patterns, or, as some have more recently suggested, are going through structural modifications due to the emergence of new hegemonies (Henderson & Nadvi, 2011). One critical strand in current debates on globalization has been the relationship between local and global actors, the nature of governance within these ties, and their implications for local policy (Held & McGrew, 2002; Henderson *et al.*, 2002; Schmitz, 2004). The creation of the *filiere* framework by the French school of territorial development (ADEFI, 1985) as well as the Michigan-based subsector approach (Boomgard *et al.*, 1992) explicitly attempted to bring together the understanding of the local development of firms (sometimes even local production systems) and the increasing importance of international markets (including actors managing the final phases of distribution and commercialization). These analytical attempts were the precursors to the GVC and GPN approaches and provide early insights into both a sectoral and an internationally integrated perspective on local industrial development processes.

Later on, in the 1990s, new theoretical frameworks emerged to take academic research several steps further in the understanding of the globalization of local production and innovation dynamics. Gereffi and Korzeniewicz (1994) developed the global commodity chains (GCC) approach which represented the academic evolution of the former concepts and paid special attention to global governance dynamics. They argued that local suppliers within some market chains were controlled or driven by downstream

actors (e.g. distribution chains in food or apparel industries), while others were organized by lead manufacturers (and also the technology leaders) who drove production and influenced market dynamics in capital-intensive industries (e.g. pharmaceutical and aircraft companies).

In the early 2000s, new efforts by this group of GCC researchers resulted in an upgrading of their analytical framework with the creation of the GVC concept. The GVC concept explicitly identified the nature of value generation along each step of the chain. It also recognized that such value-creating chains were not restricted solely to commodities but could extend across manufacturing and indeed to services. Gereffi *et al.* (2005) also underlined that identifying the nature and basis of value creation along each stage of the GVC required a conceptual framework that provided a deeper analysis of the governance dynamics within the chain. This resulted in a shift from the buyer/supplier-led chains in the GCC perspective to the five governance typologies within GVCs (Gereffi *et al.*, 2005). The nature of governance, or power, within the GVC relationship determined not only the process of adding and distributing value along the chain but also the possibilities of upgrading and thus of transformation from one type of GVC to another. As described by Bair (2005, p. 158), this GVC approach moves away from the “developmental disillusion” of many world-system experts who did not see any scope for a change between the centre and the periphery in the global economy without revolutionary upheavals in such ties. Both GCC and GVC suggest that there is both opportunity and possibility for dynamic and positive change once appropriate conditions and measures are put in place. Consequently, Humphrey and Schmitz (2002), and others, developed these frameworks further by applying the value chain concept to local and regional production systems, including local industrial clusters, in both developed and developing countries (see also Nadvi & Halder, 2005; Pietrobelli & Rabellotti, 2007) as a means to identify the potential for growth and development of such local economies, their SMEs and institutions in the context of international markets and global interactions.

A different but related framework was simultaneously developed by Ernst and Kim (2002) and Henderson *et al.* (2002), and later refined by Coe *et al.* (2008) and Yeung (2009) from an economic geography perspective. This framework helps to depict the composition of sector and multinational networks and the international economic transformations that occur in such markets in relation to specific national industrial policy approaches that stretch from open market perspectives to inward oriented indigenous/endogenous innovation approaches. More specifically, even though different GPNs are spanning the global economy and drawing different clusters and regions closer together in a new form of international division of labour, we continue to observe spatial differentiation in the location of different firms and their production networks on a global scale. In theoretical terms, there is indeed an intricate link between GPNs and industrial clusters. We can therefore think of GPNs as a globalized/decentralized phenomenon and industrial clusters as a localized/concentrated constellation of different configurations of GPNs. The former operates on a global scale and is constantly searching for better production locations, whereas the latter is developed to “bring down” and “localize” this highly globalized production activity. For GPNs to work and prosper, there must be good “network economies” to be reaped from spatially differentiated production arrangements. For industrial clusters to emerge and sustain, both local and non-local links are highly important. Local links refer to localized assets in specific territories

such as institutions, labour, and capital formation. Non-local links point to flows of knowledge, people, and capital exogenous to these industrial clusters. They are critical to the formation of industrial clusters insofar as they bring in new learning, markets and technologies

A third approach that has been more recently developed (Ernst, 2009; Cooke, 2011) emphasizes the emergence of GINs, and their implications for local-global production inter-relationships. This framework stresses the critical relevance of specific high value-added activities including dispersed engineering, product development, and research activities across geographic frontiers. The balance of power in international production and market dynamics depends very much on these activities. In fact, production has become increasingly outsourced, whereas lead firms try to retain and/or control R&D networks and activities that affect their core capabilities, learning and innovation processes on a global scale. Even though this is in line with the literature on transnational corporations, the new emerging powers (mainly Brazil, Russia, India, Mexico and China (BRIMCs)) are increasingly joining R&D activities in the form of specialized R&D departments within multinational groups and/or within their own multinationals that benefit from a thick flow of expert managers and scientists coming back from western countries after an intense period of preparation and research practice. This process implies a catching up in R&D and innovation capabilities that are likely to change the global balance of power even more strongly over the next decade.

For years, these frameworks were mostly rooted in the analysis of regional/local development in developing and/or emerging economies; however, current academic work increasingly tends to abstract from it and focus on firms and their global networks. A substantial part of this literature may reorient its objectives to follow the route of the earlier literature on multinational companies (Dunning, 1988; Cowling & Sugden, 1997; Blomstrom *et al.*, 2000; Dunning & Lundan, 2008; among others). More recently, this literature has focused on the history of large conglomerates that control R&D and innovation processes and the related production networks that determine the growth prospects of specific industries and large trans-border territories.

Overall, the fundamental insights offered by these distinct analytical frameworks might lead to a partial picture of global innovation, production and market dynamics that describe the strategies and the success achieved by an elite class of firms and a small number of lead firms that benefit from being integrated into such privileged chains and networks. Additional thinking is needed to understand the competitive position and prospects of regions within this globalized scenario by identifying the relevance of these key activities and processes (i.e. R&D, innovation, production and market) for regional development. This analysis requires taking a particular geographical approach, in other words viewing regions from a country-specific and localized perspective due to vastly different interpretation of territorial geographies. In countries such as the US, China and Brazil, the regional space might refer to aggregates of states such as the South of Brazil or the North-East of the US or the Pearl River Delta in China, where hundreds of millions of people live and work. In the case of Europe and other less federal states, the regional dimension is quite small in geographical terms and epitomizes specific histories, cultures, social and political traditions that affect the way of doing business and thus represent meaningful geographical units of analysis.

To date, the responses by Schmitz (2004), Pietrobelli and Rabellotti (2007) and on a broader "regional" basis by Yeung (2009), or by Asheim *et al.* (2008) with their analysis

of regional competitive advantages based on the related varieties approach, or even by Foray and the European Commission with their work on “smart specialization” (Foray & Van Ark, 2007), are going in this direction and set the scene for the papers presented in this special issue. More work is needed to integrate the richness of these related yet distinct analytical frameworks (GVCs, GINs and GPNs), focusing in particular on identifying key drivers for regional development in the context of push and pull forces within global markets and production and innovation systems.

### A Comparative Review of Three Global Analytical Frameworks

In Table 1, we compare the three analytical frameworks on globalization processes, highlighting their main differences and discussing their usefulness for identifying and analysing the processes of regional development. In particular, a set of criteria is taken into account: scientific discipline and reference literature, analytical focus and main unit of analysis, types of agents involved and relationships among them, governance, regional upgrading, and measurability and assessment. Such criteria are not identified on the basis of a specific model or deductive analytical structure, but rather on the basis of significant differences that can be identified from an inductive analysis of these theoretical frameworks and their empirical applications.

**Table 1.** Comparative features of GVC-GPN-GIN for local/regional development

No.	Criteria	GVC	GPN	GIN
1	Scientific discipline	Economics and sociology (mainly)	<i>Multidisciplinary (economic and political mainly)</i>	Economics and business
2	Reference literature	Business, economics and development studies	<i>Economic geography</i>	Industry and innovation studies
3	Analytical focus	<i>Value creation and distribution</i>	<i>Production network dynamics</i>	<i>Innovation network and innovations</i>
4	Main unit of analysis	Firms (indirectly on sectors/industries)	Firm/sector/industry	R&D departments, firms and industries
5	Types of agents involved	Firms	<i>All types of agents and institutions</i>	Firms and institutions/organizations
6	Relationships among agents	Chain/linear	<i>Network/systemic</i>	<i>Network/systemic</i>
7	Governance	<i>Well-defined typology</i>	Not explicit	Not explicit
8	Regional upgrading processes	<i>Product, process, function and sector</i>	Strategic coupling	<i>Innovation types (i., m., r. a.), and position in the GIN</i>
9	Measurability	Tracing cost/value per phase/operation	In broad terms (turnover/GDP) per industry or firm-specific variables	None, though feasible by adapting CSI work

Note: In italics the strength of each approach from a “regional development” perspective.

*Scientific Discipline and Literature of Reference*

The discipline of reference (2) is relevant. GVC work, which originated in international business studies, has been most effectively developed within the sociological and development studies literatures, where it has been used to focus on governance and economic power dynamics and its consequences for the development prospects of small-sized suppliers based in developing or emerging economies (Boomgard *et al.*, 1992; Gereffi & Korzeniewicz, 1994; Gereffi *et al.*, 2001). The other two frameworks (GPN and GIN) also have multifaceted origins. They include a mix of business, economic and political perspectives that go beyond the view of the individual lead firms and their suppliers and take into account wider economies integrating hundreds of firms specializing in different functions and located in various parts of the world and, yet, are interconnected within tight or loose production and innovation networks. In particular, in the case of the GPN approach, this proceeds from a literature that is very much consistent with the analysis of regional specializations and positioning within continuously changing competitive markets in economic geography. The GIN analytical framework, however, derives its instruments from the discipline of business and economics studies (such as the GVC approach), although it has a clear focus on innovation and contributes to industry and innovation studies as the main reference literatures.

*The Academic Focus*

The academic focus (3) varies in the three approaches. The GVC approach engages in the discussion of trans-border value creation and distribution as a means to understand the creation and retention of value by selected companies in the production and commercialization process vis-à-vis other companies, mostly suppliers, service providers and clients, but not competitors. This operation goes hand-in-hand with the analysis of the governance patterns at work in the value chain between vertically interacting parties. However, little can be extracted from the GVC analysis on the impact of these chains on the wider territories and production systems within which such chains are located. Its lineal approach interconnects one firm with another or with a group of other firms in supply or subcontracting relationships rather than systematizing relationships and effects on wider territorial ensembles of firms. Echoing the subsector analysis (Boomgard *et al.*, 1992), GVC could be replicated or extended to a number of parallel channels (or GVCs) and, in this way, open up a wider discussion on the differentiated impact they can have in specific territories where a relevant number of suppliers and subcontractors are located. However, in order to achieve this objective, the GVC framework needs to be combined with the analysis of clusters, as done in theoretical terms by Humphrey and Schmitz (2002), and more empirically by, among others, Knorrina (1999), Nadvi and Halder (2005) and Pietrobelli and Rabellotti (2007).

The focus of GPN is trans-frontier production networks (rather than systems). This is quite easily identifiable and relevant in the context of the automotive industry or the ICT and electronics industry. It becomes less meaningful in the context of more lineal industries such as food commodities where often production processes are localized in the country of origin (with final elaborations or adaptations to the consumers in the country of consumption, such as horticulture, floriculture and foodgrains). This approach is more likely to be used in order to describe the changing regional and national landscapes



of industries<sup>1</sup>. It is what Yeung (2007, 2009) did by assigning different forms of strategic coupling (i.e. strategy based on the combination of spatial, technological and organizational fixes) to different East Asian regions: “indigenous innovation” to Metropolitan Korea, Taiwan and Singapore in automobile and transportation industries, “international partnership” to Singapore and Taiwan in finance, petrochemicals, electronics and logistics networks, and “production platforms” to Malaysia, Thailand and most export (coastal) regions of China.

The third approach is the GIN, which focuses on trans-frontier innovation networks. This approach takes a very focused view of innovation dynamics in search of the most relevant relationships that have an impact on medium to high-tech production activities. In general, this framework concentrates on both innovation processes (incremental, radical, modular and architectural) and on the innovation roles played by different actors in the network (Ernst, 2009). Because of the great importance that innovation has acquired in promoting economic development over the past 20 years (Cooke, 2001), the GIN becomes a strategic framework for the analysis of current and future trends and leaderships in the globalized economy. In particular, the GIN offers more opportunities to extend and upgrade the overall production pattern cultivated in any region, particularly when it is combined with the analysis of the potentials for innovation across related varieties (Asheim *et al.*, 2008).

### *The Relevant Unit of Analysis*

A key methodological dimension in the comparative analysis of the three frameworks refers to their different units of analysis. The GVC approach focuses on the firm(s) as each value chain comprises a very specific set of firms in relation to their supply of systems, components and materials, subcontracting of phases, service provision and sale of products (Bair, 2005, p. 166). In spite of the general objective to analyse and verify the possibility for regions and countries to upgrade their competitive position in global markets (Gereffi & Korzeniewicz, 1994), the GVC approach generally focuses on only a limited number of firms, those that participate in each value chain, and dismisses any other firm or group of firms that compete or simply do not work with the selected lead firms.

In contrast, the GPN approach takes a broader sector or industry approach. Although it identifies the key lead firms, as the GVC analysis does, it does not stick to these alone, but extends its analytical approach to networks and clusters or country groups of firms that supply or subcontract part of the production. In this sense, it takes a territorial approach which is then integrated into the sector/industry approach. In this case, the territorial approach is quite wide as it does not refer to the kind of regional prospect that is often envisaged in European studies, but rather more from the perspective of larger regions, such as those conceived in larger geographical landscapes. For this reason, typical GPN analyses take into account GPNs and regions that integrate several countries (for example, in Yeung, 2009; Yang, 2012, in GPNs across East and South-East Asia). It is a clear trans-border and cross-country kind of regional perspective.

For the GIN approach, the unit of analysis is both the firm (and the R&D department within the firm) and the industry to which it belongs (Ernst, 2009; Cooke, 2011). Again, it is a very specific approach to inter-firm industry relationships that go beyond firm boundaries and national borders to take into account homogeneous or integrated

groups and networks of firms and industries that shape technology and competition features of any industry and market on a global scale. Such methodological dualism can be tackled with nested case studies that offer the opportunity to collect and discuss critical information on two sets of actors as well as to maintain and to manage a very open approach to innovation dynamics derived from such agent's multiplicity.

### *Simple or Complex Linkages and the Range of Relevant Actors*

One very important aspect of this comparative analysis is the kind of relationships envisaged within each of the three frameworks. The GVC approach takes a quite identifiable linear perspective. Despite the potential feedback effects running along the value chain from downstream to upstream phases, the value chain is in general identified on the basis of lineal relationships that depart from the origin (the lead firm) and are further divided into a limited number of parallel, competing, secondary channels leading to suppliers and subcontractors or service providers. In this hierarchical relationship, channels further down the value chain are often less essential to the lead company because they are the so-called first, second, third and fourth-tier suppliers. In this way, the GVC framework offers the possibility of controlling and/or assessing the flow of inputs and outputs passing from one firm to another (and vice versa within feedback loops). The approach helps obtain measures of efficiency and effectiveness, which a more thorough but less linear approach cannot easily produce.

However, this rather linear approach is possible especially because the main actors taken into account are firms. Other types of actors may be mentioned, but are not measured and assessed in their relationships and impact on localized economic activities. In their recent paper, Pietrobelli and Rabellotti (2011) conclude that the relationship between actors in local innovation systems and GVCs varies widely in relation to different forms of governance and thus is nonlinear and co-evolutionary. Cluster and/or industry associations, chambers of commerce, authorities in charge of specific infrastructures such as ports, highways, airports, science parks, technology centers, research excellence centers, universities, among others, and finally local, national and supranational governments and institutions also matter, though the GVC framework does not specifically take them into account as their integration would require a much more "systematic" (but then less business-oriented) approach to the analysis of globalization dynamics.

In this regard, the GPN framework takes a more inclusive network approach, and therefore offers the possibility of identifying and understanding the multi-scalar relationships that operate among firms and countries in specific industries and markets. It is open to the need to take a broader approach that includes not only inter-firm relationships, but also public/private and private organizations and sector/cluster-government relationships. In addition, it also opens the possibility of integrating wider levels of analysis, including social, cultural and institutional factors among others, to the understanding of territorial dynamics. Of course, this strength of "inclusivity" might be problematic—as we will see in our discussion on measurability, but it remains a crucial aspect and a potential advantage of this analytical framework vis-à-vis the GVC approach.

Notwithstanding this, the GPN approach still refers to network dynamics rather than system dynamics or, more likely, to smaller systems such as those driven by global lead firms. In conceptual terms, the concept of "systems" integrates a wide range of actors that mutually interact and coordinate horizontally through equal and balanced power



relations (Lundvall, 1992). As a consequence, such “networks” (GPNs) cannot be directly identified with “systems” and for this reason cannot fully serve as the analytical perspective of LoRD.

The GIN framework offers a similarly broad type of approach, less linear and more complex. In this case, the discussion about the similarity between system and network approaches is worthy of note, as the former does automatically include the latter, but not vice versa. Complexity does not help when quantitative measurement and assessment of these dynamics and their impact on production and innovation processes is needed. However, the GIN approach may offer a more qualitative, holistic (but also nested in cases) view and assessment of the effects that the network has on firms and production systems, especially at the national level. In addition, the GIN may offer a forecast of future developments of the industry at the global level, and in particular, of the innovation activities that will define leadership and competition trends in the coming years.

### *Governance*

An important criterion for our comparative analysis is “governance”. The three approaches differ substantially in this respect. The GVC approach is the most explicit in taking this criterion into account. Analysing the nature of asymmetrical power relationships between international lead firms and their globally dispersed suppliers is central to the GVC analysis, with implications for value creation, value appropriation, upgrading and policy. The GVC model distinguishes between market, modular, relational, captive and hierarchical governance linkages within vertical ties (Gereffi *et al.*, 2005). This is rooted in transaction costs analysis and is based on determining, within such vertical ties, the level of supplier capabilities, the complexities of transactions with suppliers, and the degree to which such transactions can be easily codified. Further analyses based on such a taxonomy link it with the varied opportunities for development that they are likely to offer, some of which are more likely to promote product and process upgrading (the case of hierarchical and captive value chains), others more inclined to encourage process upgrading (within market-based chains), and others more bent to develop functional and inter-sector upgrading, as occurs in the case of modular and relational value chains (Humphrey & Schmitz, 2002). Governance pressures in GVCs are often accentuated by the need to ensure that suppliers conform with international standards on quality, labour and environmental pressures (Nadvi, 2008). Recent research within this approach shows that the governance pattern may vary significantly across different tiers of suppliers in the same value chain, as highly competent first-tier suppliers are more likely to develop relational and modular types of relationships with lead firms, whereas third and fourth-tier suppliers normally maintain hierarchical, captive or even market types of relationships with actors further up the chain (Elola *et al.*, 2012).

In contrast, the GPN approach does not offer an explicit analysis of governance relationships, although the position of lead companies vis-a-vis suppliers and subcontractors located in specific territories of the selected GPNs is often discussed. Through this means, the GPN approach clarifies the margins for upgrading processes of such sets of suppliers/providers that often tend to be located in close proximity to one another in the form of territorial clusters in the wider geography of GPNs. Going back to Yeung’s (2009) three-fold classification of production platforms, indigenous innovation and international partnership, these forms of strategic coupling in East Asian regional economies show the